

CLAIMS

What is claimed is:

1. A system for performing an input processing function on a data
5 packet comprising:
an input port;
a first processor coupled to said input port which determines an
attribute of said data packet; and
an memory coupled to said first processor having a plurality of
10 queues of differing priorities, wherein said data packet is assigned to one of said
plurality of queues based upon said attribute and input processing is performed
in a fixed amount of time and variable latency operations are performed after said
data packet is stored in said memory.

15 2. The system as recited in Claim 1 wherein said attribute comprises
an indicator of a priority characterizing said data packet.

3. The system as recited in Claim 1 wherein said attribute is chosen
from the group consisting essentially of:
20 a type characterizing said data packet;
encapsulation of said data packet;
a priority corresponding to a tag comprising said data packet;
a priority corresponding to another criterion;
an Internet Protocol header identity;
25 a Transfer Control Protocol header identity;
a class assigned to said data packet;
a class of service rating assigned to said data packet;
a quality of service assigned to said data packet; and
a differentiated services field.

4. The system as recited in Claim 1 wherein said system functions in concert with a subsequent processor.

5 5. The system as recited in Claim 1 wherein said data packet is received at said input port under a networking control protocol.

6. The system as recited in Claim 5 wherein said networking control protocol comprises a media access control layer.

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7. The system as recited in Claim 1 wherein said memory functions as an input buffer.

8. A method for performing an input process on a data packet comprising:

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pre-processing said data packet to determine a characteristic of said data packet before said data packet is buffered;

determining one of a plurality of queues within a memory corresponding to said characteristic; and

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storing said data packet in said one of said plurality of queues according to said characteristic determined by said pre-processing; wherein said processing operation is performed is performed prior to said passing.

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9. The method as recited in Claim 8 wherein said input process is chosen from the group consisting essentially of:

classifying a type characterizing said data packet;

detecting encapsulation of said data packet;

assigning a priority corresponding to a tag comprising said data packet;

assigning a priority corresponding to another criterion;

decoding an Internet Protocol header;

5 decoding a Transfer Control Protocol header;

detecting a class assigned to said data packet;

detecting a class of service rating assigned to said data packet;

detecting a quality of service assigned to said data packet; and

detecting a differentiated services field.

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10. The method as recited in Claim 8 wherein said input process is performed by an input pre-processor.

11. The method as recited in Claim 10 wherein said passing said data packet through to said queue further comprises pipelining said data packet with
15 no variable latency.

12. The method as recited in Claim 8 wherein said input process operates to place said data packet it in an appropriate queue within said input
20 memory system.

13. The method as recited in Claim 8 wherein said forwarding process enables said input memory system to utilize a full bandwidth of said input port.

14. The method as recited in Claim 8 wherein said input memory system buffers subsequent processing of said data packet.
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15. A system for input processing a data packet comprising:
means for ascertaining an attribute of said data packet; and

means for storing said data packet wherein said storing means comprises a plurality of means for queuing said data packet corresponding to said attribute.

5 16. The system as recited in Claim 15 wherein said means for ascertaining further comprises:

 means for processing said data packet; and

 means for pipelining said data packet into said means for storing.

10 17. The system as recited in Claim 15 wherein said system operates with no variable latency.

 18. The system as recited in Claim 15 wherein said attribute is chosen from the group consisting essentially of:

15 a type characterizing said data packet;

 encapsulation of said data packet;

 a priority corresponding to a tag comprising said data packet;

 a priority corresponding to another criterion;

 Internet Protocol header information;

20 Transfer Control Protocol header information;

 a class assigned to said data packet;

 a class of service rating assigned to said data packet;

 a quality of service assigned to said data packet; and

 a differentiated services field.

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 19. The system as recited in Claim 15 wherein said means for storing further comprises means for buffering said data packet.

20. The system as recited in Claim 19 wherein said buffering means operates to buffer a subsequent processing operation wherein said subsequent processing operation comprises selectively a fixed and a variable latency.

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